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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,766	11/08/2001	Brad R. Lewis	30014200-1002	3626

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EXAMINER	
NAHAR, QAMRUN	

ART UNIT	PAPER NUMBER
2191	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,766	LEWIS ET AL.	
	Examiner	Art Unit	
	Qamrun Nahar	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20060915*.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on 08/04/2006.

2. The rejection under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-56 of copending Application No. 10/005,783 in view of Motoyama (U.S. 5,535,318) to claims 1-26 is withdrawn in view of applicant's submission of terminal disclaimer filed on 12/08/2005.

3. The rejection under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Lomet (U.S. 5,870,763), and further in view of Razdow (U.S. 6,330,008) to claims 1-4, 6-15 and 17-25 is moot in view of new ground(s) of rejection.

4. The rejection under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Lomet (U.S. 5,870,763), and in view of Razdow (U.S. 6,330,008), and further in view of Cai (U.S. 6,349,363) to claims 5, 16 and 26 is moot in view of new ground(s) of rejection.

5. Claims 1-26 are pending.

Terminal Disclaimer

6. The terminal disclaimer filed on 12/08/2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 10/005,783 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-2, 7-8, 12-13, 18-20 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Lomet (U.S. 5,870,763), and further in view of Serra (U.S. 6,226,787).

Per Claim 1:

Calder teaches dividing the memory into blocks (column 4, lines 29-40); assigning at least a portion of the data and at least one code segment to each block (column 3, lines 56-62; Table 1 in column 4, lines 8-17; and see Figure 4 for the mapping of the data and code segment to the cache memory); determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block; and generating a graph representing the blocks and the determined dependencies (column 3, lines 56-66; column 7, lines 6-56; column 8, lines 10-54; and column 12, lines 25-37). Calder does not explicitly teach storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code segment or determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block using the read and write identifiers or facilitating development of the data flow program by generating a graph representing the blocks and the determined dependencies and displaying the graph to a user.

Lomet teaches storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code

segment ("state identifier field" in column 18, lines 30-31 and lines 55-59); determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block using the read and write identifiers (column 19, lines 1-35); and facilitating development of the data flow program by generating a graph representing the blocks and the determined dependencies (column 18, line 55 to column 19, line 21).

Serra teaches displaying the graph to a user (column 2, lines 29-42).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Calder to include storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code segment; determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block using the read and write identifiers; and facilitating development of the data flow program by generating a graph representing the blocks and the determined dependencies and displaying the graph to a user using the teaching of Lomet and Serra. The modification would be obvious because one of ordinary skill in the art would be motivated to minimize cache misses by ensuring the proper order of computer operations (Calder, column 1, lines 17-39).

Per Claim 2:

The rejection of claim 1 is incorporated, and the combination of Lomet and Serra further teaches wherein the step of displaying comprises the step of displaying a graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies (Lomet, column 18, line 55 to column 19, line 21; and Serra, column 2, lines 29-42).

Per Claim 7:

The rejection of claim 1 is incorporated, and Serra further teaches wherein the data includes a data structure, and wherein the step of displaying further comprises the step of: facilitating visualization of at least a portion of the data structure accessed by at least one of the code segments by graphically presenting at least a portion of the data structure and accentuating the portion of the data structure accessed by the at least one code segment (column 2, lines 51-63).

Per Claim 8:

This is another version of the claimed method discussed above, claim 1, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claims 12, 13, & 18:

These are computer-readable medium versions of the claimed method discussed above (claims 1, 2 and 7, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claim 19:

This is another version of the claimed method discussed above (claims 1 and 6), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above,

including "while the code segments are executing, determining which nodes in the graph are unexecuted nodes and which nodes in the graph are executed nodes; and displaying the unexecuted nodes in a manner visually distinctive from the executed nodes" (Serra, column 2, lines 51-63). Thus, accordingly, this claim is also obvious.

Per Claim 20:

This is a data processing system version of the claimed method discussed above (claims 1 and 2), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 23:

This is a data processing system version of the claimed method discussed above (claims 1 and 2), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including "means for apportioning a memory into regions and associating the data and the code segments with the regions" (Calder, column 3, lines 56-62; Table 1 in column 4, lines 8-17; and see Figure 4 for the mapping of the data and code segment to the cache memory). Thus, accordingly, this claim is also obvious.

Per Claim 24:

This is a computer readable memory device version of the claimed method discussed above, claim 1, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 25:

The rejection of claim 24 is incorporated, and Calder further teaches wherein the data structure further comprises: a processed flag that indicates whether at least one of the nodes is executed or unexecuted (column 5, lines 36-49).

9. Claims 3-4, 6, 9-11, 14-15, 17 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Lomet (U.S. 5,870,763), further in view of Serra (U.S. 6,226,787), and further in view of Ju (U.S. 6,175,957).

Per Claim 3:

The rejection of claim 2 is incorporated, and Serra further teaches displaying executed nodes of the graph (column 2, lines 51-63). However, the combination Calder, Lomet, and Serra fails to teach the step of displaying further comprises the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied. Ju teaches the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied (column 10, lines 1-9).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by the combination Calder, Lomet, and

Serra to include the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied using the teaching of Ju. The modification would be obvious because one of ordinary skill in the art would be motivated to display performance information to a user.

Per Claim 4:

The rejection of claim 2 is incorporated, and the combination of Serra and Ju further teaches further comprising the steps of: receiving a node selection specifying a selected one of the nodes; determining unmet dependencies for the selected node; and displaying in a visually distinctive manner the unmet dependencies in the graph (Serra, column 3, lines 30-34; and Ju, column 10, lines 1-9).

Per Claim 6:

The rejection of claim 2 is incorporated, and the combination of Serra and Ju further teaches wherein nodes are assigned to the blocks include executed nodes and unexecuted nodes, and wherein the step of displaying further comprises the step of displaying the unexecuted nodes using an unexecuted visualization and the executed nodes using an executed visualization (Serra, column 2, lines 51-63; and Ju, column 10, lines 1-9).

Per Claim 9:

This is another version of the claimed method discussed above, claim 6, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 10:

The rejection of claim 9 is incorporated, and Serra further teaches wherein the nodes include executing nodes, and wherein the step of displaying comprises the step of displaying the executing nodes with an executing visualization (column 2, lines 51-63).

Per Claim 11:

This is another version of the claimed method discussed above, claim 3, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claims 14-15 & 17:

These are computer-readable medium versions of the claimed method discussed above (claims 3-4 and 6, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claims 21-22:

These are data processing system versions of the claimed method discussed above (claims 6 and 3, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

10. Claims 5, 16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Lomet (U.S. 5,870,763), and further in view of Serra (U.S. 6,226,787), and further in view of Cai (U.S. 6,349,363).

Per Claim 5:

The rejection of claim 2 is incorporated, and further, the combination of Calder, Lomet and Serra does not explicitly teach providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread. Cai teaches providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread (column 7, lines 30-40).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by the combination of Calder, Lomet and Serra to include the step of providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread using the teaching of Cai. The modification would be obvious because

one of ordinary skill in the art would be motivated to provide improved memory performances (Cai, column 1, lines 61-67 to column 2, lines 1-2).

Per Claim 16:

This is a computer-readable medium version of the claimed method discussed above, claim 5, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 26:

This is a computer readable memory device version of the claimed method discussed above, claim 5, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Response to Arguments

11. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Fridays from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y Zhen, can be reached on (571) 272-3708. The fax phone number for the organization where this application or processing is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QN
October 12, 2006

WEI ZHEN
SUPERVISORY PATENT EXAMINER